NEWFOUNDLAND REGION GROUNDFISH OVERVIEW

Background

In Newfoundland, Science Branch of the Department of Fisheries and Oceans is responsible, either directly or indirectly, for advising on the status of numerous groundfish stocks extending from Davis Strait in the north to off the south coast of Newfoundland in the south.

In this area, there are 5 cod stocks (2GH, 2J3KL, 3M, 3NO and 3Ps), 5 redfish stocks (SA2+3K, 3LN, 3M, 3O and Unit 2), 4 American plaice stocks (SA2+3K, 3LNO, 3M and 3Ps), 3 witch flounder stocks (2J3KL, 3NO and 3Ps), 2 Greenland halibut management areas (SA0+1 and SA2+3KLMNO), 2 haddock stocks (3LNO and 3Ps), 1 yellowtail flounder stock (3LNO), 1 pollock stock (3Ps), 2 roundnose grenadier stocks (SA0+1 and SA2+3) as well as a portion of the 3NOPs4VWX Atlantic halibut stock. In addition, there is a fishery for lumpfish, as well as relatively new fisheries for monkfish and skates. These latter two came under quota management for the first time in 1995.

Scientific information on the above stocks is provided either through the DFO Science Branch regional review process and the FRCC, or the Scientific Council of NAFO. Quotas are set by the NAFO Fisheries Commission for 3NO and 3M cod, 3LN and 3M redfish, 3LNO and 3M American plaice, 3LNO yellowtail flounder, 3NO witch flounder and SA2+3KLMNO Greenland halibut. The NAFO Scientific Council also reviews the Canadian assessment of 2J3KL cod on an annual basis. Greenland halibut and roundnose grenadier in SA0+1 are managed bilaterally by Denmark, on behalf of Greenland, and Canada. Quotas for the other stocks are set by the Minister of the Department of Fisheries and Oceans based on recommendations of the FRCC.

The Newfoundland Region Stock Status Reports contain information only for those stocks for which the FRCC provides direct catch recommendations to the Minister. Information on the stocks evaluated and managed by NAFO is contained in separate documentation; the reports of the NAFO Scientific Council.

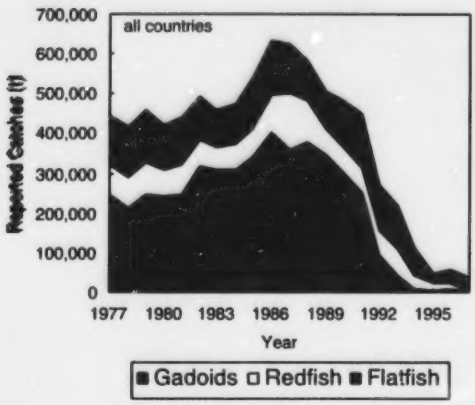
Detailed technical information on each of the stock assessments can be found in the research documents listed with each stock report. Technical information for the NAFO stocks is available through the NAFO SCR Document series.

The Groundfish Fisheries

Cod traditionally dominated catches in Newfoundland waters, but with the decline of this resource, catches of other species have come to exceed those of cod. Significant reductions in catches of a number of different species and stocks has occurred since 1994 as a result of reduced fishing effort in the NAFO Regulatory Area (NRA). For Canadian managed stocks, groundfish catches were dominated by 3O redfish in 1997.

In 1997, the only directed fisheries on 'traditional' species were for Greenland halibut in SA0+1 and SA2+3KLMNO; cod in 3M; redfish in 3LN, 3M, 3O and Unit 2; and witch flounder in 3Ps. There was also a catch of about 800 metric tonnes of witch flounder taken from the 2J3KL stock in the

NRA by international fleets although the fishery on this Canadian managed resource was closed to Canadians. There is a moratorium on fishing the 2J3KL witch flounder stock in the NAFO Regulatory Area for 1998 imposed by the Fisheries Commission of NAFO.



Directed fisheries for redfish in 3LN are not permitted for 1998, a closure also put in place by the Fisheries Commission of NAFO. A limited yellowtail flounder fishery (4,000 metric tonnes) is permitted by the Fisheries Commission in divisions 3NO for 1998.

Canadian fisheries for 'non-traditional' species such as lumpfish, monkfish, wolffish, white hake, winter (blackback) flounder and skates continued in 1997.

Background to Groundfish Reviews

This overview provides an update on the status of **2GH cod**, **3LNO** and **3Ps haddock**, **3Ps pollock**, **SA2+3K** and **3Ps American plaice**, **3Ps witch**, **SA2+3K redfish**, as well as **winter (blackback) flounder**, **wolffish (catfish)**, **lumpfish** and **monkfish**. These stocks will not be formally assessed this year but their status has been updated by the responsible assessment scientists.

Cod in **Div. 2J3KL** and **Subdivision 3Ps** were assessed during a zonal assessment meeting in early 1998 (DFO Stock Status Reports A2-01 (1998) and A2-02 (1998) respectively).

Div. 3O redfish and **Unit 2 redfish** will be reviewed in detail during a zonal meeting scheduled for early October. **Skates** and **white hake** will be reviewed regionally in early October. Stock Status Reports for all of these will be available following the assessments.

Information on the status of stocks assessed by NAFO, as well as the 1998 advice of Scientific Council, is available in the **report of the June 1998 meeting (NAFO SCS Doc. 98/17)**.

Offshore Research Surveys

As indicated in past Overview documents (Anon., 1996; Anon., 1997), the Newfoundland Region has recently changed to using the Campelen 1800 shrimp trawl with 'rock-hopper' foot gear for its research surveys. This gear provides better information on young fish as well as other species such as crab and shrimp.

Concurrent with the gear change, there was also a reduction in the duration of the standard tow from 30 minutes to 15 minutes.

Different fishing gear will catch different sizes and quantities of fish species. Therefore, before being able to relate catches from surveys using the new survey trawl and 15 minute tow duration to those made in the past using the previous survey trawl (Engel) and 30 minute tow duration, it was necessary to conduct **comparative fishing experiments**. These experiments were described in some detail in the 1996 Overview (Anon. 1996).

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Conversion factors are now available for the 'traditional' species, and are being applied to research vessel data. Data conversion has been completed for some stocks/species but is ongoing for others. For the most, conversions have not been completed for species not undergoing full reviews in 1998. It must also be noted that it is not possible to develop conversion factors for 'non-traditional' species at this time.

Groundfish Resource Status

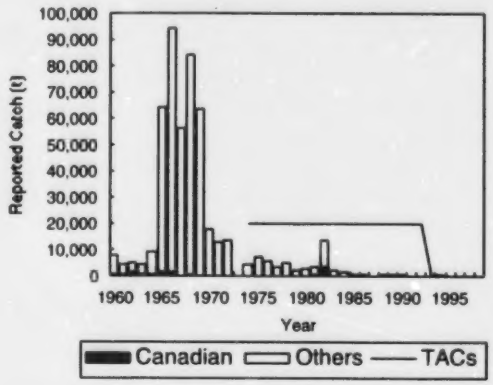
The **'traditional' groundfish resources** in the waters around Newfoundland continue to be at, or very near historical low levels. For **Canadian managed stocks** with TAC's still in place, reduced TAC's were imposed for 1995, and further reductions occurred for 1996 and 1997. For 1998 the TAC for 3Ps witch flounder has been increased to 650 metric tonnes. The Unit 2 redfish quota was increased to 11,000 metric tonnes for 1998.

For the **NAFO-managed groundfish stocks** including those of Flemish Cap, directed fisheries are permitted only for 3M cod, Greenland halibut and 3LNO yellowtail flounder in 1998.

Divisions 2GH Cod

No directed fishing has been permitted on this stock since 1996. There has been no reported catch since 1991. A **research survey** in 1997 covering most of the area in the 200 -1,500 meter depth range located no significant concentrations of cod. The survey biomass for Div. 2GH in the area surveyed was only about 1,000 metric tonnes.

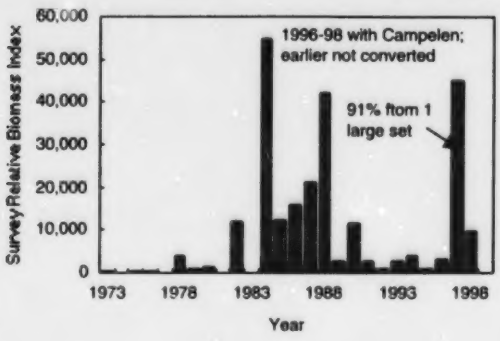
As in 1996, the survey coverage and timing were probably more appropriate for Greenland halibut than cod in that cod may have been inshore of the surveyed area at the time of the survey. Without appropriate survey coverage/timing or other inshore activity it will remain unknown if concentrations of cod exist shoreward of the 200 meter contour. Nonetheless, it appears that the **stock remains at a low level** compared to earlier periods.

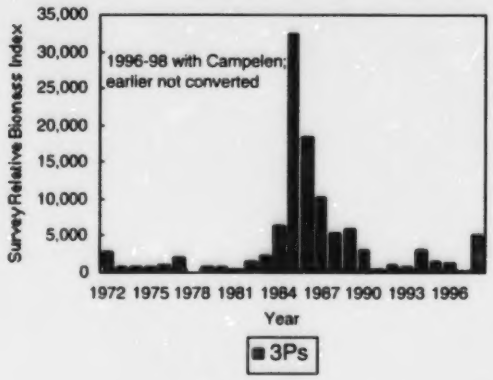


Divisions 3LNO Haddock

Management advice was that there be no directed fishing, and by-catch be limited to 100 tons for both 1996 and 1997. For 1998 a closure on directed fishing remains in place. Reported **catch** for 1997 was 190 metric tonnes; 95% of this taken in 3O. The low catches in recent years are partially due to the moratoria on cod and flatfish stocks in the 3LNO area first imposed in 1994 by NAFO, as well as reduced haddock by-catch limits.

In 1994 and 1995 the **spring research survey index** was low with estimates being similar to those of the 1970's. The survey index increased sharply in 1997 compared to 1996. **But, it should be noted that this increase was due to one large catch of large prespawning fish (97% of the abundance and 98% of the biomass). No juvenile haddock were caught during the 1997 survey.** Preliminary analysis indicates that the spring 1998 3LNO survey located much fewer haddock.





This stock will not begin to recover unless there is good recruitment.

Subdivision 3Ps Haddock

Catches of haddock in 3Ps since 1960 have been mainly in the 1,000 to 2,000 metric tonne range, but increased to 7,500 metric tonnes in 1985 before falling below 1,000 metric tonnes after 1990. Reported **catch** for 1997 was only 69 metric tonnes.

No directed fishing and by-catch restrictions have been in place for a number of years. For 1998 there is again no directed fishery allowed.

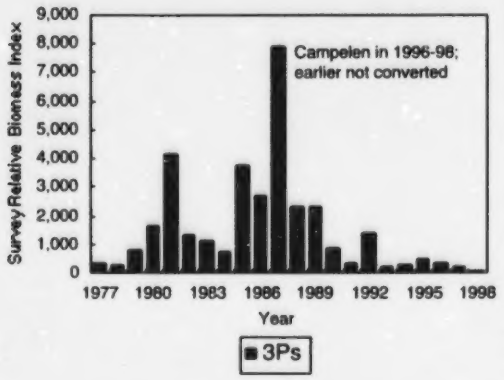
Research vessel surveys have been conducted by Canada since 1972. The trawl index of haddock biomass from these surveys was low from 1972 to 1982, peaked in 1985 due to the presence of the relatively strong 1981 year class, but then declined again to low levels. The 1996 survey found very few haddock and the 1997 survey found even less. The 1998 3Ps survey results suggested some increase but biomass is still at a low level when compared the mid to late 1980's. There were no reports of by-catch in the 1997 cod fishery.

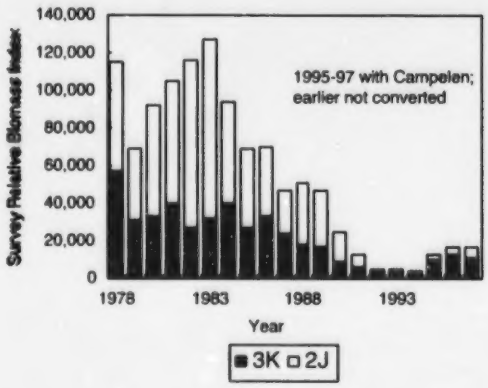
Without recruitment, this stock will not increase.

Subdivision 3Ps Pollock

Reported landings of pollock increased to 439 metric tonnes in 1996, over four times the by-catch limit for that year. In 1997 there was again no directed fishing permitted but the by-catch limit was increased to 1,500 metric tonnes so as to not impede the re-opened cod fishery. Reported **catch** for 1997 was 590 metric tonnes.

The pelagic nature of pollock has always led to questions as to whether **research vessel surveys** give a reliable index of abundance or biomass. Keeping these uncertainties in mind, the relative biomass index was low in the 1970's, then gradually increased until 1989. Since then it declined again to pre-1980 levels. Estimates have remained low in the 1990's. Even with the change to Campelen gear with a presumed catchability greater than the Engel, the index for 1996 - 1998 was only about 7% of the average of the 1980's. The 1998 estimate at only 50 metric tonnes is the lowest on record.





Pollock have never been a major component of the commercial fishery in NAFO Subdiv. 3Ps. The fishery is opportunistic, and based on the occurrence and survival of year-classes against great odds in the extreme north of their range. There may also be occasional migration into the area from further south.

Subarea 2 + Division 3K American Plaice

Catch from this stock was only about 8 metric tonnes in 1997, the third consecutive year in which the catch has been less than 25 metric tonnes.

Research vessel surveys continue to show that the stock is at a very low level. In Div. 2J and 3K combined, the **biomass index** declined by over 95% between 1982-83 and 1992-94.

The 1995 to 1997 surveys were conducted with the new Campelen trawl gear, known to have a much higher catchability of small American plaice. Therefore the survey biomass indices in Div. 2J and Div. 3K for 1995 to 1997 are not directly comparable with previous values. However, even with this change in survey gear, the divisions 2J3K biomass index in the most recent 3 years is only about 10 - 15% of the peak values seen in 1982-83. There is no trend in the biomass estimates from 1995 to 1997.

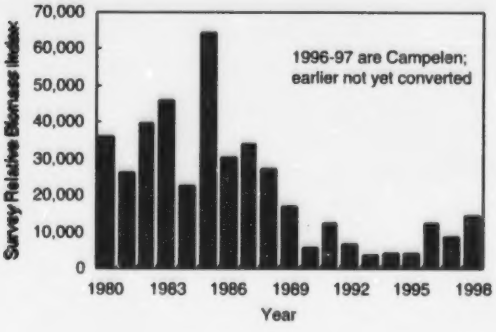
Surveys in Div. 2GH in 1996 and 1997 indicate very low biomass of American plaice in these areas, at less than 10% of the level in Div. 2J3K combined.

Given the current stock size estimates from the surveys, there **continues to be no optimism about recovery** of this stock in the short or medium term.

Subdivision 3Ps American Plaice

Catches from this stock remain well below the historic average, but have increased from 76 metric tonnes in 1995 to 203 metric tonnes in 1997. Most of the catch is taken as by-catch in other fisheries, such as that for Subdiv. 3Ps witch flounder.

Research vessel survey information shows that this stock is at a very low level. The 1993-95 survey biomass estimates were only 10% of those in the mid-1980's. The surveys in 1996 to 1998, conducted using the Campelen trawl, also gave very low biomass estimates relative to the 1980's even though the catchability is greater with this gear than with the Engel trawl.



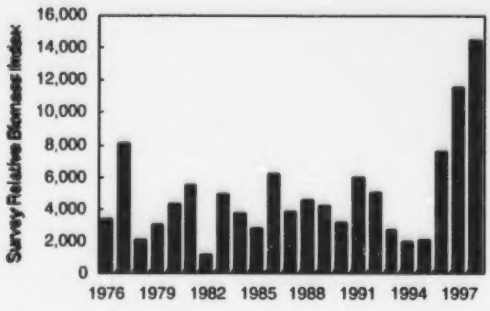
The **outlook for this stock remains pessimistic**, given the current low stock size, and the lack of recruitment indicated by the surveys. **In the short to medium term, there continues to be no prospect for stock rebuilding**.

Subdivision 3Ps Witch Flounder

This fishery has remained open, with a 500 metric tonne TAC in 1997, and 650 metric tonnes for 1998. The **catch** has been less than the TAC in the last 4 years; in the range of 250 to 400 metric tonnes. In 1997, 289 metric tonnes were taken. By-catch of other species (cod, American plaice) remains a problem in this fishery.

The **survey biomass index** has been highly variable over time, fluctuating between years but with little in the way of longer term trends. The survey biomass index was below average but relatively stable from 1993 to 1995 and within the range of previous estimates. The 1996-98 surveys were done with the new Campelen gear so results are not directly comparable with those of the previous surveys. It has been shown that catchability with the Campelen gear is higher than with the Engel.

There is an increasing trend in the biomass estimates from 1996 to 1998. However this may reflect growth of individuals since estimates of abundance remained stable during the same period.

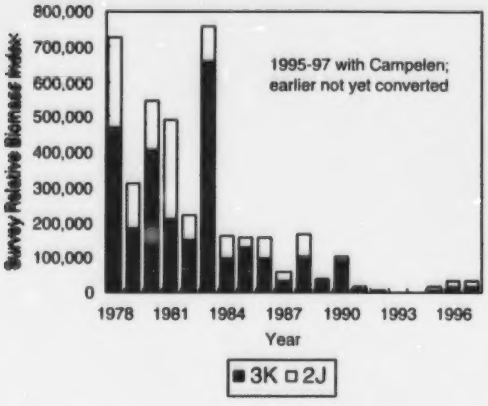


Catches at the level of the current TAC are not likely to cause a decline in this stock.

Subarea 2 + Division 3K Redfish

There has not been constant directed effort on this stock since 1990 when 2,400 metric tonnes were landed. **Landings** declined to 280 metric tonnes in 1991 and have been 15 metric tonnes or less in each year from 1992 through 1997. Estimates of discarded redfish, taken as by-catch in shrimp fisheries, declined from 386 metric tonnes in 1992 to 110 metric tonnes in 1994. Estimates from the 1995-97 shrimp fisheries have not been compiled to date.

Results from **research vessel surveys** in Div. 2J and 3K suggest the resource was at an historically low level in 1994. The 1995-97 survey estimates cannot at this time be compared directly with the historical series because data conversion is not yet complete. Although the Campelen trawl has resulted overall in a higher catchability than before, the estimates for 1995-97 are still very low, less than 10% of the 1978-88 average.

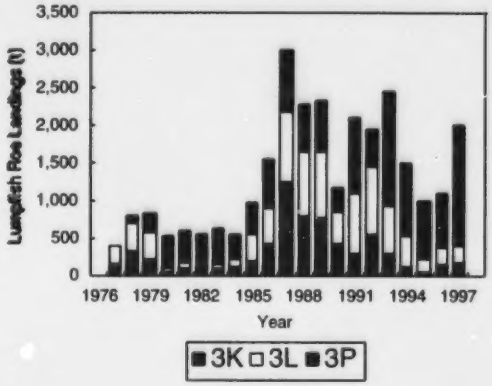


This **stock remains at a low level**. Recruitment has been very poor since the year classes of the early 1970's. **There are no indications that the status of the stock will change in a positive way in the foreseeable future.**

Lumpfish in Divisions 3K, 3L and 3P

Lumpfish roe **landings** from divisions 3K, 3L and 3P were approximately 500 metric tonnes from 1977 to 1984. They reached a high of 3,000 metric tonnes in 1987 then declined to an average of 2,000 metric tonnes from 1988 to 1994. There was a decline to 1,000 metric tonnes in 1995 and 1996. The landings increased to 2,000 metric tonnes with 3Ps at an all time high of 1,600 metric tonnes in 1997.

The lumpfish fishery is exclusively on pre-spawning mature females and therefore the spawning stock is vulnerable to over-exploitation. Since the cod moratorium there has been an increase in fishers entering this fishery.



This fishery is regulated by **effort controls**. There have been reductions in numbers of nets allowed as well as duration of the fishery in recent years These reductions in effort over time were imposed as a result of indications of stock declines, particularly in divisions 3K and 3L.

Research vessel surveys are not considered to be representative of the stock due to the seasonal migratory pattern of this species.

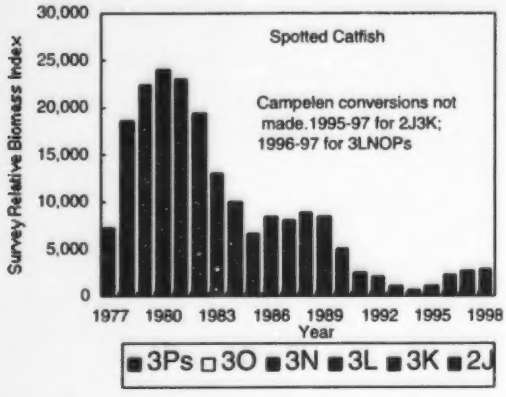
There is **insufficient new data available to determine the current status of this resource**.

Catfish (Wolffish) in Divisions 2J, 3K, 3L, 3N, 3O and 3Ps

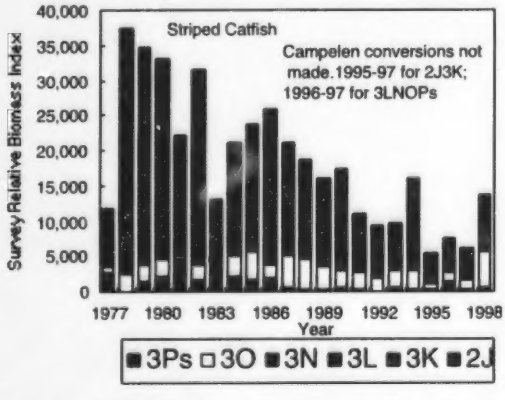
Historically, catfish have mainly been taken as by-catch in other fisheries. During the 1980's **catches** exceeded 10,000 metric tonnes in most years. They declined after 1991 when many fisheries were closed. Reported catch was only 23 metric tonnes in 1996, but increased to 165 metric tonnes in 1997.

For **spotted wolfish**, the **research survey biomass index** remains at a low level. The data suggest some increase in 1996 and 1997, and again in 1998 for 3LNOPs combined but this may be due, at least in part, to the change in gear used.

Nonetheless, the estimates remain very much below those observed in the 1980's.



For **striped wolfish**, the **survey biomass index** also remains at a relatively low level, although the overall decline has not been as great as occurred with spotted wolffish.



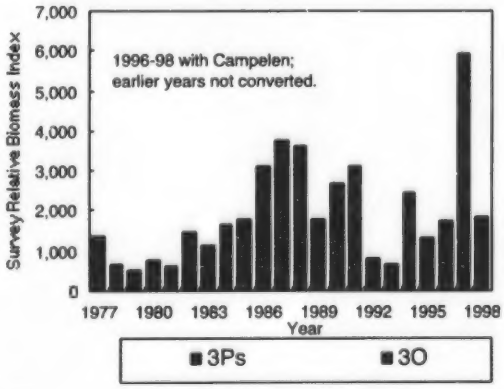
Winter (Blackback) Flounder in Divisions 3K, 3L and 3Ps

Catches increased in 1994 and 1995 to 1,568 and 1,037 metric tonnes respectively, but declined again in 1996 and 1997 to 561 and 460 metric tonnes respectively, similar to levels observed in the late 1980's and early 1990's. It is unknown whether these declines represent a decline in the resource or a decrease in fishing effort.

Blackback flounder is rarely observed in research vessel catches as it is generally restricted to less than 60 m water depth. Thus, **lack of data make it impossible to determine trends in biomass or examine other biological characteristics**. The distribution of reported landings suggest that it is widespread along the coast.

Monkfish in Divisions 3L, 3N, 3O and 3Ps

A directed trawl Fishery for monkfish began in 1991, and almost 400 metric tonnes were taken that year. **Catches** gradually increased with the development of this fishery, to about 1,000 metric tonnes in 1994, but the 1995 catch fell to only 160 metric tonnes under a quota restriction of 200 metric tonnes. The same quota level was in place for 1996 when 255 metric tonnes were landed. The 1997 catch increased to 475 metric tonnes although the quota remained at 200 metric tonnes.

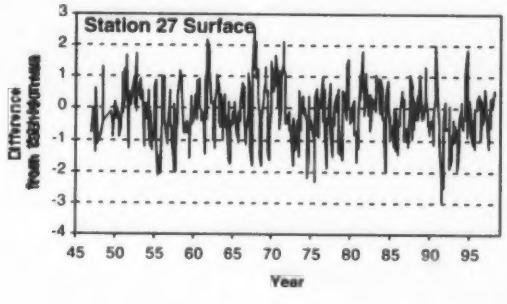


The **survey biomass index** showed a dramatic increase from 1995 to 1996, but declined again in 1997. Because of the change in fishing gears beginning in 1996, it is not possible to interpret the most recent survey data. **If catchability is greater with the Campelen, then this resource may be declining**.

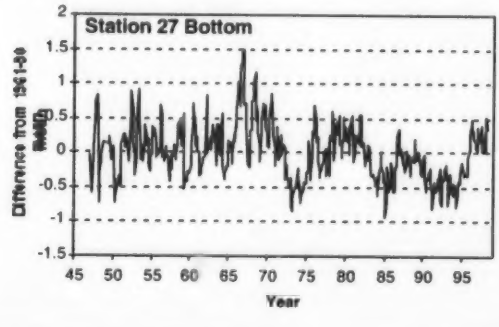
The Environment

Annual air temperatures over most of the northwest Atlantic were cooler in 1997 compared to 1996. They were however, warmer than normal over the Labrador Sea. **Sea ice** generally arrived later and left early resulting in a shorter duration then usual, although the extent was greater than in 1996. The number of **icebergs** reaching the Grand Banks was higher than in 1996 but still about 60% lower than during the early 1990's.

At **Station 27** off St. John's, temperatures over all depths were near normal or above normal throughout the water column during winter months. In April the surface waters became cooler than normal and this cooler water extended into May.



It gradually extended deeper to reach 100 meters by October. During fall, temperatures in the upper layers were near normal, while bottom temperatures were near normal throughout the year.



Summer salinity values continue to be below the long term average.

During the summer of 1997, the area of the **cold intermediate layer (CIL)** on the Newfoundland shelf was below normal, continuing the declining trend from 1995. Core temperatures were near normal within the CIL.

Off the **south coast**, the relatively cold conditions which began around the mid-1980's have moderated somewhat, even though below normal bottom temperatures continued through 1996. There was some cooling again in 1997 although temperatures warmed to near normal late in the year in inshore areas.

Outlook

Overall, there are no signs of recovery for stocks examined in this overview. Many of the species are relatively long lived and will require a number of years following the next good recruitment before these year-classes would begin to contribute to the spawning stock biomass.

An exception to the above is witch flounder in Subdivision 3Ps which appears to be stable or increasing somewhat at the current catch levels.

For More Information

Research Documents:

Colbourne, E. 1998. Oceanographic conditions in the Newfoundland region during 1997. DFO Atl. Fish. Res. Doc. 98/29

Drinkwater, K.F., E. Colbourne and D. Gilbert. 1998. Overview of environmental conditions in the northwest Atlantic in 1997. NAFO SCR Doc. 98/638.

Reports:

Anon. 1996. Newfoundland Region Overview. DFO Science Stock Status Report 96/43E.

Anon. 1996. Divisions 2GH cod. DFO Science Stock Status Report 96/44E.

Anon. 1996. Divisions 3LNO haddock. DFO Science Stock Status Report 96/46E.

Anon. 1996. Subarea 2+3K redfish. DFO Science Stock Status Report 96/47E.

Anon. 1996. Subarea 2+3K American plaice. DFO Science Stock Status Report 96/48E.

Anon. 1996. Subdivision 3Ps haddock. DFO Science Stock Status Report 96/82E.

Anon. 1996. Subdivision 3Ps pollock. DFO Science Stock Status Report 96/83E.

Anon. 1996. Subdivision 3Ps American plaice. DFO Science Stock Status Report 96/84E.

Anon. 1996. Subdivision 3Ps witch flounder. DFO Science Stock Status Report 96/85E.

Anon. 1996. Divisions 3L, 3N, 3O and 3Ps skates. DFO Science Stock Status Report 96/86E.

Anon. 1996. Monkfish in Divisions 3L, 3N, 3O and 3Ps. DFO Science Stock Status Report 96/89E.

Anon. 1996. White hake in Divisions 3L, 3N, 3O and 3Ps. DFO Science Stock Status Report 96/90E.

Anon. 1996. Catfish (wolffish) in Divisions 2J, 3K, 3L, 3N, 3O and 3Ps. DFO Science Stock Status Report 96/91E.

Anon. 1996. Blackback (winter) flounder in Divisions 3K, 3L and 3Ps. DFO Science Stock Status Report 96/92E.

Anon. 1997. Newfoundland Region Groundfish Overview. DFO Science Stock Status Report A2-19 (1997).

Anon. 1997. Report of Scientific Council 4-19 June 1997. NAFO SCS Doc. 97/14.

Anon. 1998. Divisions 2J3KL cod. DFO Science Stock Status Report A2-01 (1998).

Anon. 1998. Subdivision 3Ps cod. DFO Science Stock Status Report A2-02 (1998).

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